

Complete and Stain-free Drying

Drying is not always duly considered in planning cleaning facilities. It gets into focus abruptly, however, once drying associated quality problems emerge and drying becomes a bottleneck impeding the whole cleaning process.

This experience is shared by the Breitenwang, Tirol, site of Ceratizit Austria GmbH. The Austrian manufacturer is a company of the globally operating Plansee Group and produces hard metal rods for drills and milling cutters. These cutting tools are used in medical and dental applications but also in the automotive, aerospace and many other industries. The company controls the whole process chain from powder production and forming, through sintering until final surface finishing.

Following grinding or cutting, the hard metal rods are cleaned and must be dried thereafter. But drying formed a bottleneck, a situation which the company would not tolerate. Ceratizit found an ideal solution in heat pump based condensation drying. Two such drying systems have been used for quite some time, a third system has just been put into service.



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Baskets with hard metal rods entering the dryer. The rods are dried completely and stain-free within three minutes at 45 °C.

Drying Tests for Successful Application

Earlier, the metal rods leaving the cleaning station in baskets were subjected to compressed air blowing and then underwent static drying on hotplates at 200 °C. This left some of the rods incompletely dry plus the noise impact was unsatisfactory and the heat situation required extreme caution. “We wanted to improve and further automatize our process, resolve the problems and improve quality” explains Thomas Randl, machining section leader

of Ceratizit’s extrusion line. So the company searched for a qualified partner and found the drying system manufacturer Harter.

At the beginning of the first project, drying tests were conducted. It was the longer rods contacting each other in the basket which posed the biggest challenge. They required some additional measures to be taken. One of these measures is a special blowing-off provision which Harter puts before the drying process proper to resolve such challenging situations. Air blowing is normally combined

with drying and always uses non-compressed air. Complete and stain-free drying was achieved by combined air blowing and drying so that the first drying system could be designed and built.

Free Passage of Air through Bulk Material

Besides non-compressed air blowing and efficient removal of humidity, successful drying required more measures to be taken. The perforated basket bottom, for example, was modified using an enginee-



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The dehumidification module, which may be placed in various positions, provides the necessary process air.

the new roller track integrated, they can run the baskets comfortably to the dryer. The water dripping from the baskets is collected in a drip pan underneath the roller track so that no spillage must be removed. The low drying temperature also eliminates any health and safety risks for the workers. Having an overall connected load of but 7 kW the system is also energy efficient.

ring trick to ensure optimum free passage of air. The new baskets were designed to perfectly suit Ceratizit's product portfolio. This ensures that the metal rods in the basket tend to be evenly spread, not too densely packed and not fully in contact with each other.

Following cleaning, the baskets are placed on a roller track and moved to the dryer. The dryer door opens at the push of a button, the baskets are inserted and the door closes again. Then, the product specific procedure is started. First, the hard metal rods have water blown off by horizontally movable nozzles. Then, the drying proper commences. After three minutes the rods are dry and available for further processing.

Gentle Low Temperature

All customer requirements were met and the process significantly improved by the use of heat pump technology. All hard metal rods are completely dry and show no more staining, a problem induced by the hot air treatment used before. Drying is effected in a gentle way at a temperature of no more than 45 °C. Such gentle drying is based on two requisites – efficient dehumidification and adequate air routing. Harter uses an alternative physical approach. Extremely dry, and thus unsaturated air is passed over or through the items to be dried absorbing moisture in the process.

The moisture-laden air is stripped of the humidity it carries in the so-called Airgenex dehumidification module. The humidity condenses and the condensate is drained off the system. Subsequently, the cooled air is reheated using the heat recuperated and is returned to the dryer.

The circuit is closed. Equally important is well-directed airflow so that the dry air is routed exactly to the place where it is supposed to absorb humidity.

Improved Health and Safety Conditions

This drying solution is also much of a relief for the workers. Before, they had to carry the sometimes heavy baskets from the cleaning station to the hotplates. With

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